

Lunar Materials for Research

Carlton Allen

Astromaterials Curator

Johnson Space Center



Between 1969 and 1972 six Apollo missions brought 382 kilograms of lunar rocks, core samples, pebbles and dust from the lunar surface.



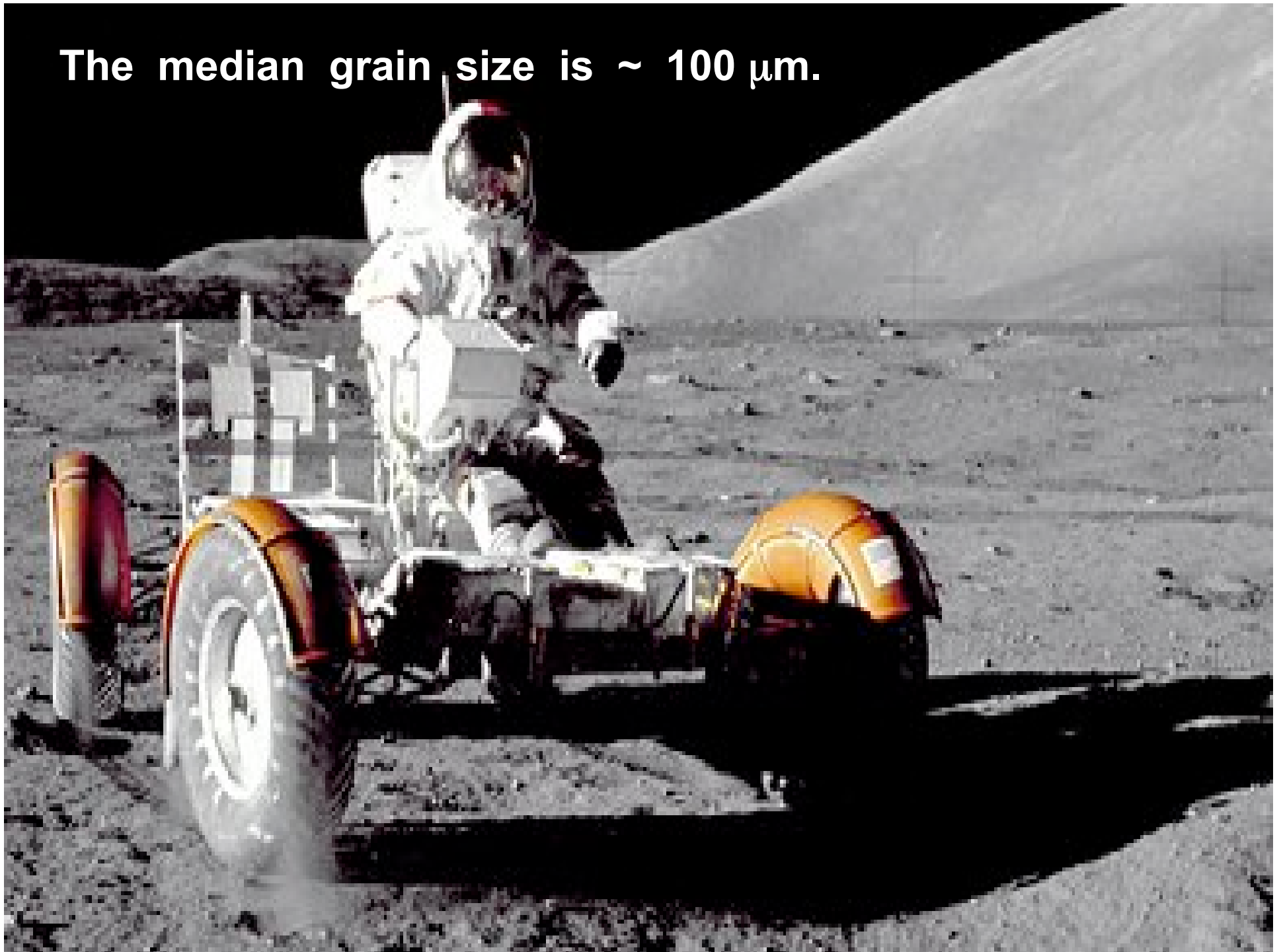
This total includes 92 kg of rock and “soil” < 10 mm.



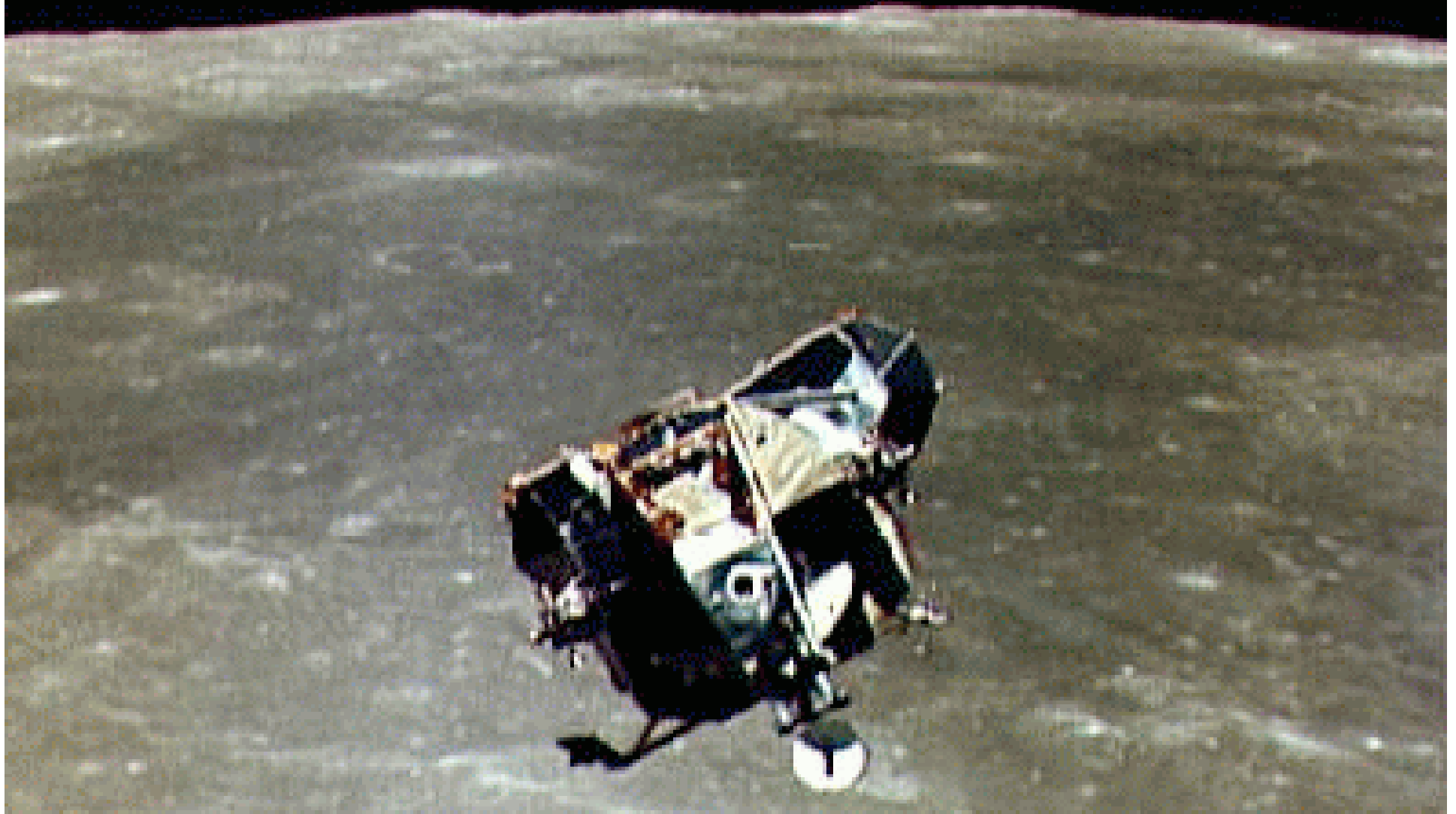
Lunar soil is a complex mixture of rock and mineral grains shattered by impact, along with impact-derived glass and volcanic glass.



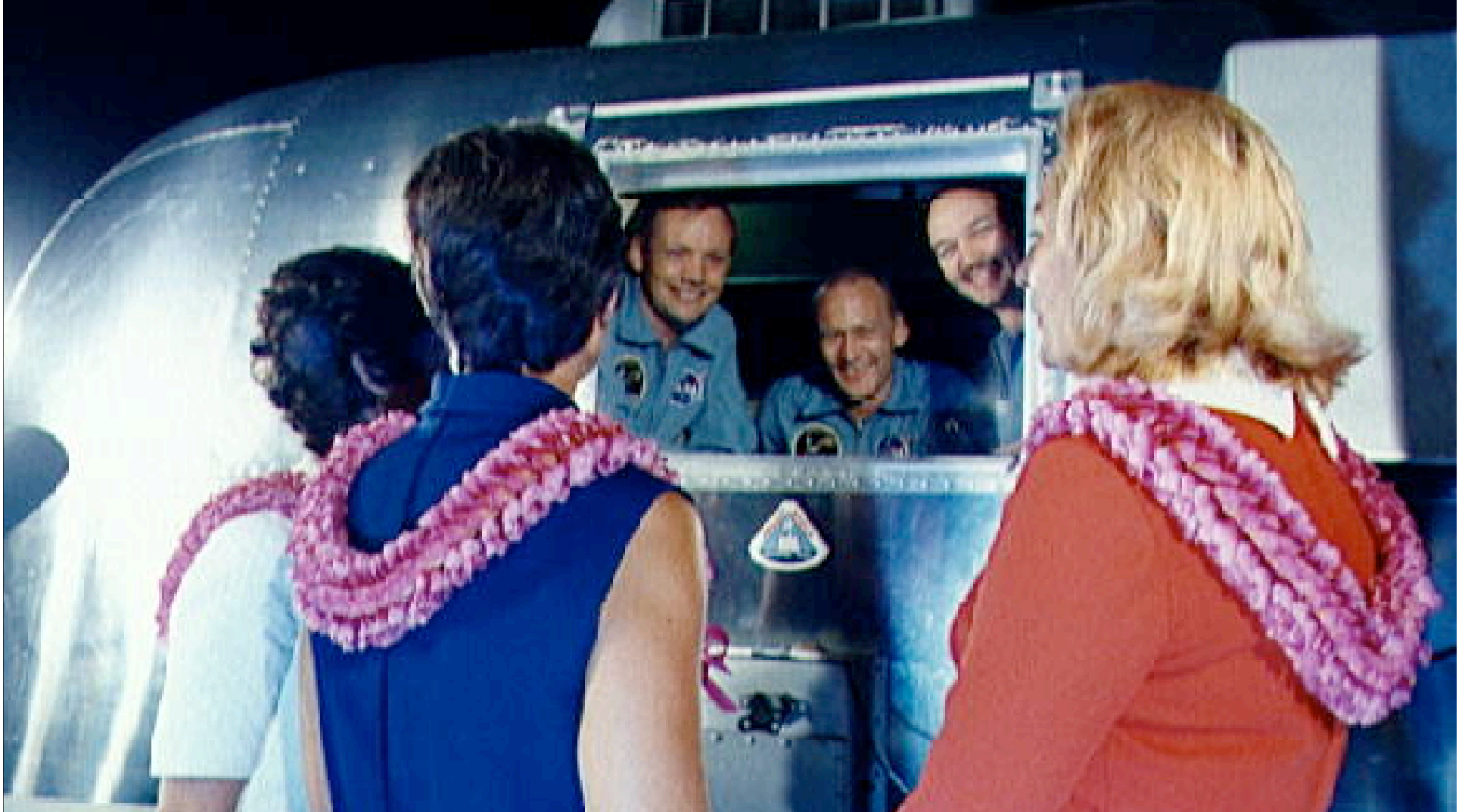
The median grain size is $\sim 100\ \mu\text{m}$.



The astronauts were exposed to lunar dust in microgravity during their return to Earth.



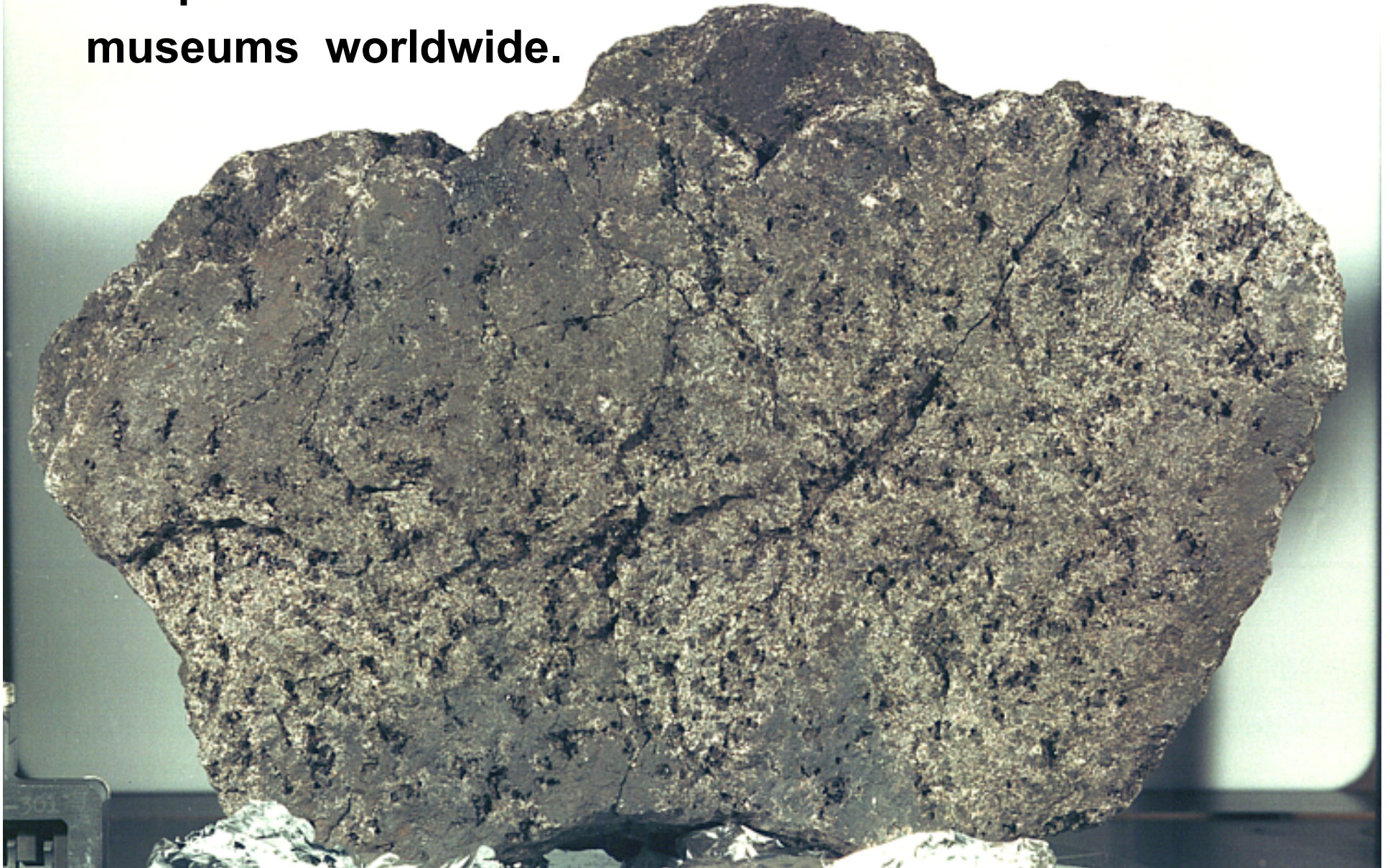
The astronauts, capsule and samples from Apollo missions 11, 12 and 14 were placed into biological quarantine and transported to Houston.



The samples were tested for evidence of life and biohazards.



No such evidence was found, and since 1970 lunar samples have been distributed to researchers and museums worldwide.



The samples are curated in a dedicated facility at JSC.






**Lunar samples
are stored
under nitrogen
gas in a high-
security vault.**

The Lunar Sample Laboratory at JSC prepares hundreds of samples each year for scientists around the world.





**However,
a large
portion
of the
original
Apollo
collection
remains
available
for
research.**

A black and white photograph of a lunar surface, showing a US flag planted in the ground. The flag is partially visible, with its stripes and stars clearly shown. The foreground is covered in dark, granular lunar soil and small rocks. The background is a vast, desolate landscape of the moon's surface.

Scientists proposing to investigate lunar materials should submit a written request specifying the numbers, types and quantities of samples needed as well as the planned use of the samples. Destructive, as well as non-destructive, investigations are permitted.


The sample request should be submitted to:

**Dr. Gary Lofgren
Lunar Sample Curator
NASA Johnson Space Center
Houston, TX 77058**

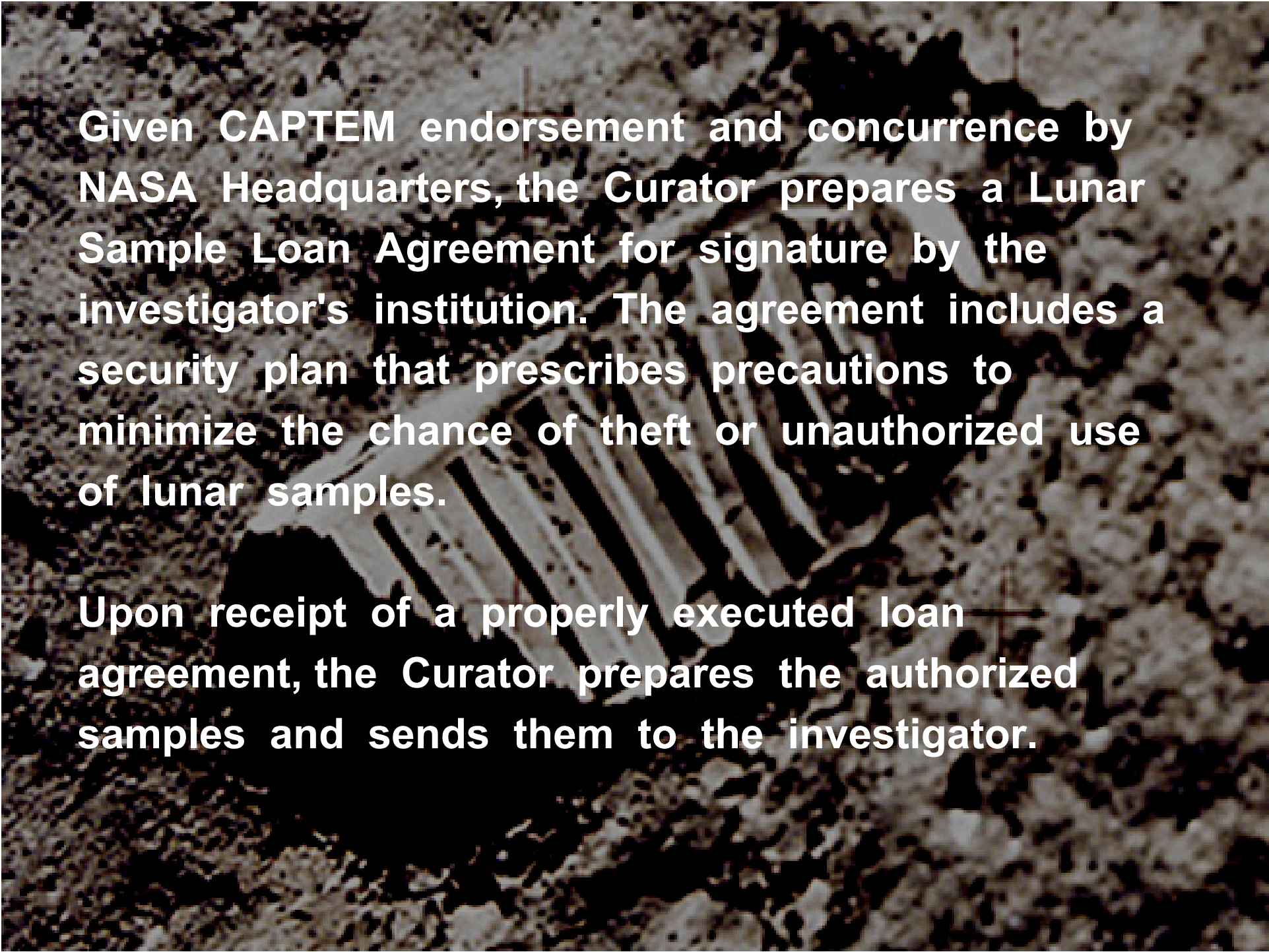


Researchers must demonstrate favorable scientific peer review relevant to the proposed work.

Investigators proposing the application of analytical methodologies not previously applied to lunar samples should submit test data obtained for simulated lunar materials.

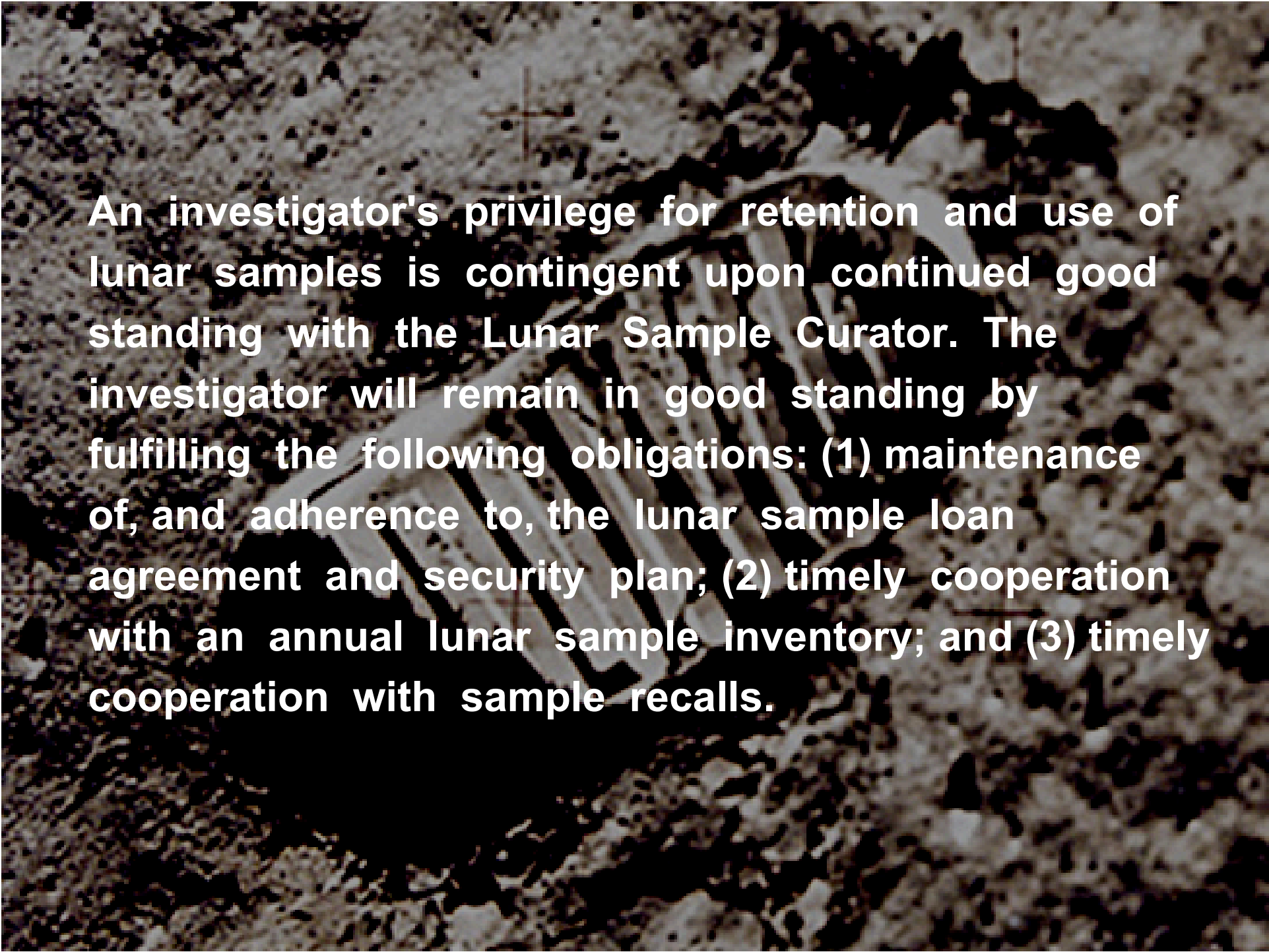


The Lunar Sample Curator will research the availability of the requested samples and decide whether outside review is required. For outside review, the Curator forwards the request to the Curation and Analysis Planning Team for Extraterrestrial Materials (CAPTEM), a standing committee of scientists who advise NASA on the care and use of lunar samples.



Given CAPTEM endorsement and concurrence by NASA Headquarters, the Curator prepares a Lunar Sample Loan Agreement for signature by the investigator's institution. The agreement includes a security plan that prescribes precautions to minimize the chance of theft or unauthorized use of lunar samples.

Upon receipt of a properly executed loan agreement, the Curator prepares the authorized samples and sends them to the investigator.



An investigator's privilege for retention and use of lunar samples is contingent upon continued good standing with the Lunar Sample Curator. The investigator will remain in good standing by fulfilling the following obligations: (1) maintenance of, and adherence to, the lunar sample loan agreement and security plan; (2) timely cooperation with an annual lunar sample inventory; and (3) timely cooperation with sample recalls.

Questions ?

